**LESSON PLAN**

**CONTENT AREA:** Mathematics **NAMES**: Nithya Subbiah

**GRADE LEVEL:** 7th Grade **TITLE or TOPIC:** Algebra

**NEXT GENERATION SUNSHINE STATE STANDARDS:**

Benchmark Number: MA.7.A.1.2

Benchmark Description: Solve percent problems, including problems involving discounts, simple interest, taxes, tips, and percents of increase or decrease.

**UNIT:** Percents

**GOAL:** Students will develop an understanding of and apply proportionality, including similarity.

**OBJECTIVE:** Students will be able to convert fractions to percentages and

**MATERIALS:**

Computer or computer stations

Pictoral of mall floor plan

Centimeter Graph Paper  
Shops at the Mall Activity Sheet   
Calculators (optional)

**PROCEDURES:**

Begin by generating a class list of stores typically found in a shopping center or mall. Challenge students to group stores into general categories, such as women's clothing, food service, and so on. Ask students which types of stores seem to be most prevalent and least prevalent at a mall. For example, department stores, clothing stores are more prevalent over Target or grocery stores in a mall.

Discuss the word *lease*. What does it mean? (For rent or hire). Why are leases important to shopping center or mall operators? Students will most likely discuss financial reasons to keep a mall open and pay rent. The International Council of Shopping Centers recommends that malls allocate a certain percent of the total square footage of leasable retail space using the following guidelines:

* women's clothing: 25%
* men's clothing: 10%
* food: 15%
* service (salons, etc.): 5%
* shoes: 10%
* jewelry: 3%
* family items: 7%
* gifts: 17%

Note that the International Council only recommends space allotments and does not recommend specific allocations for all 100 percent of the space within a mall. Ask students why they think this is. If the class doesn’t seem to have any ideas or scome up with any responses, the teacher can encourage the students by showing them a floor plan of a mall and pointing out office space or utility space. Students can also discuss that main demographic of people that visit a mall and if they believe that has an impact of space allottments.

Encourage students to conduct some research at the mall or shopping center closest to where they live. For a homework assignment, ask them to list all the stores in the mall and to place each into one of the International Council's categories listed above. Alternatively, students can find this information on individual shopping mall websites. Draw the students' attention to the fact that the recommendations were made in 1985. Ask students, "How have malls changed since then?" What problems might those changes pose for students in their task?

When all lists have been compiled, ask students to share their data and justify the placement of specific stores within each category. Where did they place stores such as clothing stores? A bank? A pharmacy? A video store? Ask them to find the total number of stores at the mall, the number of stores in each category, and the percent of each type of store listed. How does the local mall's space allocation compare with the International Council's recommendations?

Tell students that they can lease space within a new mall. Distribute the *Shops at the Mall* activity sheet to each student.

After students have completed the first two items, encourage them to share their results and strategies. Some may use proportional reasoning, calculate with fractions, or use calculators.

Organize students into groups of two or three for the final activity. Distribute *centimeter graph paper* to each group to use when creating the scale drawing of the mall. Before beginning the activity, discuss the criteria for mall design. After all drawings are complete, encourage each group to share its plan along with a justification for each element. The plans can be compared with, and contrasted against, the criteria provided as well as the International Council's recommendations.

**EVALUATION:**

Students will be evaulated on their drawings of the mall floor plan and if the percentages match the allotted spaces discussed in the International Council’s recommendations or the new allottments from the *Shops at the Mall* activity sheet. In addition, to assess individual student ability, there will be a short quiz with approximately 5-10 questions reviewing the concepts of percentages.

Shops at the Mall NAME \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Complete the first section of the activity sheet individually.

**1.** You are planning to lease space for a new mall that has one million square feet of leasable space. Determine how much space you would allocate for each type of specialty shop by completing the table below.

TYPE OF SHOP PERCENT OF MALL ALLOCATED LEASABLESPACE

Women’s clothing 25

Men’s clothing 10

Food 15

Service 5

Shoes 10

Jewelry 3

Family Items 7

Gifts 17

**2.** Using the guidelines, about how much of the mall’s space would not be leased?

What would you do with the remaining space? Discuss your decision here.

**Making a Scale Drawing**

Work with your group to complete the following activity.

**3.** Make a scale drawing of your mall, showing how you will allocate leasable space. Be prepared to share your drawing with the rest of your class. Consider the following:

Some stores will be bigger than others.

Stores competing for the same business must not be located next to each other.

A written or visual plan for dealing with traffic flow (walking) in the mall must be

included.

A mall will have two stories, and both floors must be included in your drawing.

A food court should be located on the mall’s second floor.